Code No: **R42034** **R10** **Set No. 1**

IV B.Tech II Semester Supplementary Examinations, April/May - 2017

AUTOMATION IN MANUFACTURING

(Mechanical Engineering)

Time : 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

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1 a) What are the different types of automation? Discuss them briefly. [8]
b) What are the important mechanical feeding devices used in automated systems? Discuss them briefly. [7]

2 a) Explain the differences between intermittent transfer mechanism and continuous transfer mechanism. [8]
b) Give the reasons for including a storage buffer in an automated production line? [7]

3 a) What are the three problem areas that must be considered in the analysis and design of an automated production line? [7]
b) Briefly discuss the following related to the efficiency of an automated flow lines:
i) Efficiency of line without storage buffer
ii) Efficiency of line with storage buffer [8]

4 a) Explain the following terms in line balancing:
i) Minimum rational work element
ii) Total work content
iii) Work Station Process Time [7]
b) Discuss any four methods that should be considered by the designer of a flow line for improving the efficiency of the assembly line. [8]

5 a) What are the three important categories of Automated Guided Vehicle Systems? [7]
b) Discuss briefly the AGVS guidance systems and explain the applications of AGVS. [8]

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6 a) Explain the configuration and control features of carousel storage systems. [8]
b) Discuss the problems encountered in the control of AS/RS operation. [7]

7 a) What is the objective of Adaptive Control with Constraints? Draw the block diagram of a typical computerized Adaptive Control with Constraints system for any machining operation and explain in detail. [12]
b) What are the limitations of Adaptive Control systems? [3]

8 a) Differentiate between contact and non-contact inspection methods mentioning their advantages & applications. [8]
b) Describe the types of Coordinate Measuring Machines with neat sketches. [7]